DOE Data Center Certified Energy Practitioners Program

Magnus K. Herrlin, Ph.D.

Lead DC-CEP

ANCIS Incorporated

DC-CEP Program Overview

The data center industry and the US Department of Energy (DOE) are partnering to develop a certification process leading to practitioners qualified to evaluate the energy status and efficiency opportunities in data centers.

Key objective: Raise the standards of those involved in energy assessments of data centers to accelerate energy savings in the dynamic and energy-intensive marketplace of data centers.

DC-CEP Program Overview

The Practitioner: Trained on system-level energy assessments in data centers: Design, operation, and diagnostics experience; measurement equipment techniques and data collection knowledge.

Training & Exam: Pass minimum qualifications for prior experience and a certification exam, including demonstration of proficiency in the use of select tools in the DOE *Save Energy Now* DC Pro software tool suite.

Expectations from an End User's Perspective

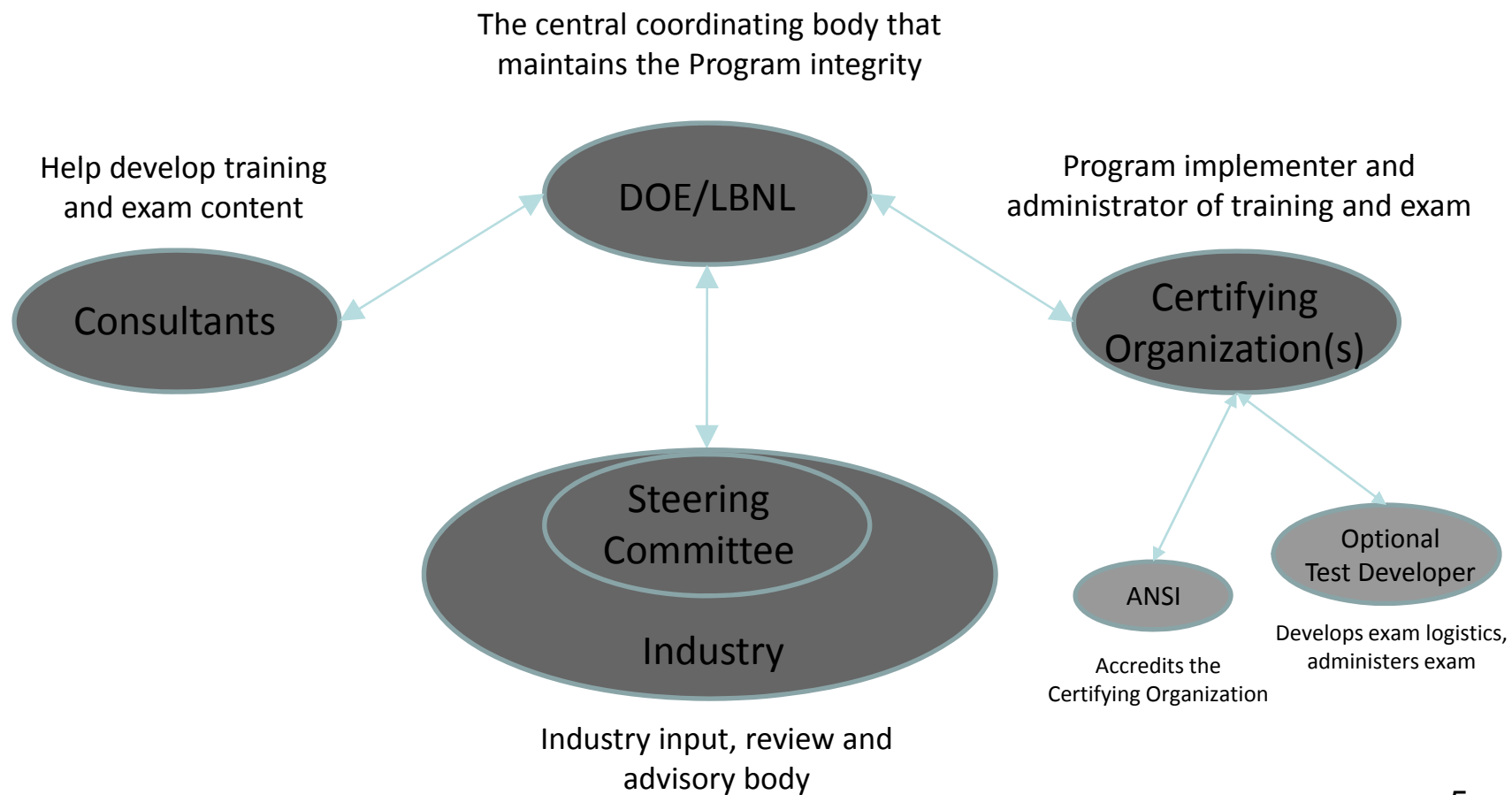## What criteria could be used to measure success?

Accelerate Energy Savings through Assessments:
- Develop an energy profile with the internal data center team
- Performed assessments in multiple data center disciplines
- Identify a complete list of potential energy saving measures
- Conduct an investment-grade assessment for one project
- Document cost and energy savings from projects implemented.

Accelerate Internal Processes for Multiplying Savings:
- Help organization form an energy management team/program
- Create internal champions to lead ongoing energy savings
- Build internal awareness and expertise to multiply savings.

Data Center Certified Energy Practitioner Training

DC-CEP Organizational Structure

The central coordinating body that maintains the Program integrity

Help develop training and exam content

DOE/LBNL

Program implementer and administrator of training and exam

Consultants

Certifying Organization(s)

Steering Committee

Industry

ANSI

Accredits the Certifying Organization

Optional Test Developer

Develops exam logistics, administers exam

Industry input, review and advisory body

Target Groups for Becoming Practitioners

- Property management companies
- Consulting firms (A&E, energy, commissioning)
- Service companies (IT and infrastructure vendors)
- Data center end users, including federal agencies
- Federal agencies
- State energy agencies
- Colleges, universities, and vocational training
- Utilities (aid incentive programs)

Training Summary

- Train on a total of four data center disciplines
- High-level or in-depth level training
- Training Diploma track (training only) or Certification track (training + exam)
- Train on DOE *Save Energy Now* DC Pro Software Tools
- Train on the process of doing energy assessments
- Gain knowledge to pass DC-CEP exam
- On-line training option.

Training Disciplines/Tools

- IT-Equipment
- Air Management
- Cooling Systems
- Electrical Systems
- DOE *Save Energy Now* DC Pro Software Tools

Training Levels

Level 1: High-Level Training/Exam on All Disciplines

IT-Equipment, Air-Management, Cooling Systems, and Electrical Systems

Level 2: In-Depth Training/Exam on Select Disciplines

Cooling Systems	Air Management	Electrical Systems	IT Equipment

HVAC Pilot (2009)
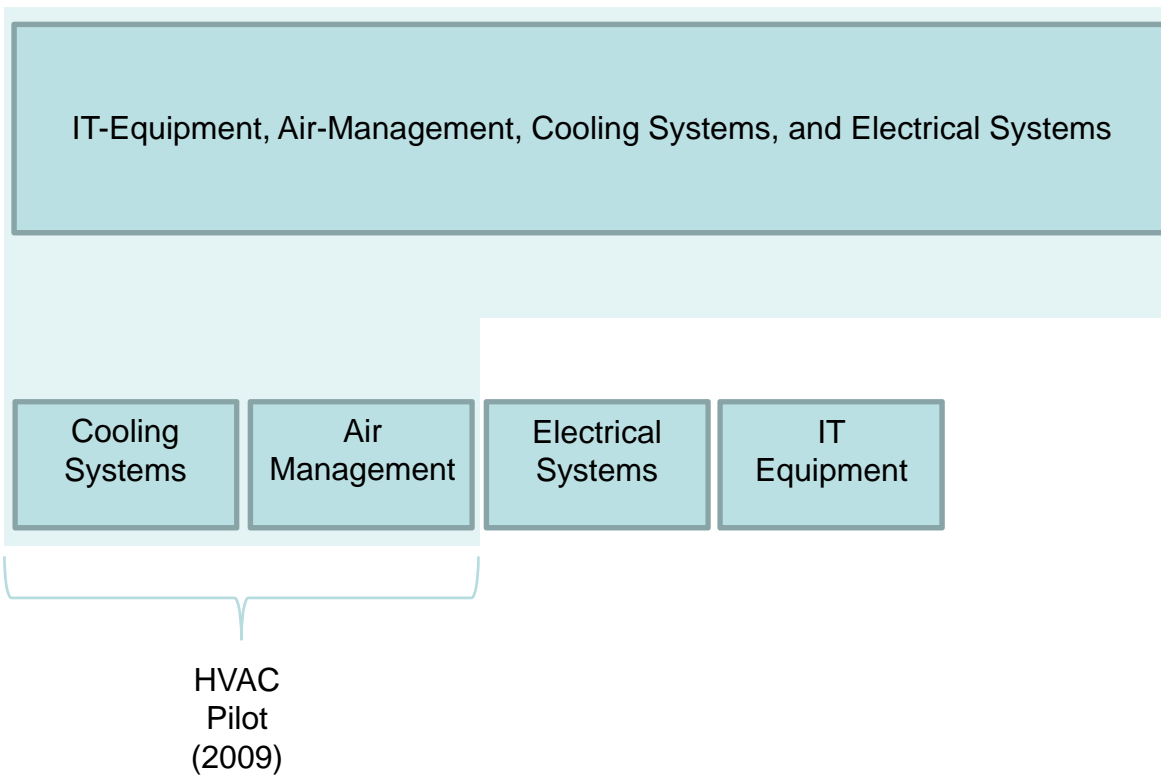
Note: Investment grade (Level 3) assessments are not part of the DC-CEP Program

Pilot HVAC Three-Day DC-CEP Training

❑ **Day 1 High-level Training on all Disciplines**
- IT Equipment
- Air management
- Cooling systems
- Electrical systems
- Controls and Tuning
- DOE DC Pro Profiling Tool

❑ **Day 1 In-depth Training on Air Management and Cooling**
- Environmental requirements
- Airflow and temperature management
- DOE DC Pro Air-Management Tool
- Air handlers
- Liquid cooling

❑ **Day 2 In-depth Training on Cooling Systems**
- Economizers
- Cooling controls
- Central chilled-water plant
- Commissioning
- Related cooling tools

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Program Requirements

- Candidate Pre-qualifications
- Candidate Training
- Certification Exam/Test
- Re-certification

Pre-qualifications

	Prequalification
Level 1 **High-level knowledge in HVAC, Electrical, IT-Equipment, and On-Site Generation**	One of the following: 4-year tech degree with 3 years verifiable DC design/operation experience 2-year tech degree with 6 years verifiable DC design/operation experience 10 years verifiable DC design/operation experience
Level 2 **In-depth knowledge in HVAC (AM and Cooling)** Electrical and IT-Equipment will be offered in 2010	All of the following: Passing score on the Tier 1 exam 4-year tech degree with 3 years verifiable DC design/operation experience or 4-year non-tech degree with 5 years verifiable DC design/operation experience PE, CEM, or equivalent

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Training

	Training
Level 1 **High-level knowledge in HVAC, Electrical, IT-Equipment, and On-Site Generation**	Optional 1-day training including the DC Pro Profiling Tool and a Case Study Study guide with study references, practice exam, and review questions will be available.
Level 2 **In-depth knowledge in HVAC (AM and Cooling)** Electrical and IT-Equipment will be offered in 2010	Obligatory 2-day training including applicable DC Pro Assessment Tools and a Case Study Study guide with study references, practice exam, and review questions will be available.

Exam/Test

	Exam/Test
Level 1 **High-level knowledge in HVAC, Electrical, IT-Equipment, and On-Site Generation**	Obligatory Waiting period of 6 months to retake if failed
Level 2 **In-depth knowledge in HVAC (AM and Cooling)** Electrical and IT-Equipment will be offered in 2010	Obligatory Waiting period of 6 months to retake if failed

Recertification

	Recertification
Level 1 **High-level knowledge in HVAC, Electrical, IT-Equipment, and On-Site Generation**	<u>All</u> of the following every 3 years: Accumulation of four credits; given for a number of activities, including assessments performed with independent survey of results achieved Complete retraining webcasts for DC Pro Tools Updates
Level 2 **In-depth knowledge in HVAC (AM and Cooling)** Electrical and IT-Equipment will be offered in 2010	<u>All</u> of the following every 3 years: Accumulation of eight credits; given for a number of activities, including assessments performed with independent survey of results achieved Complete retraining webcasts for DC Pro Tools Updates

DOE DC Pro Tool Suite

High-Level On-Line Profiling (and Tracking) Tool

- Overall efficiency (DCiE)
- End-use breakout
- Potential areas for energy efficiency improvement
- Overall energy use reduction potential

In-Depth Assessment Tools → Savings

IT-Equipment	Cooling	Air Management	Electrical Systems
• Servers • Storage & networking • Software	• Air handlers/ conditioners • Chillers, pumps, fans • Free cooling	• Hot/cold separation • Environmental conditions • RCI and RTI	• UPS • PDU • Transformers • Lighting • Standby gen.

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Example of Assessment Tool: Air-Management

The AM-Tool developed by DOE is a free Excel tool for assessing the data center air-management status.

http://www1.eere.energy.gov/industry/saveenergynow/dc_pro.html
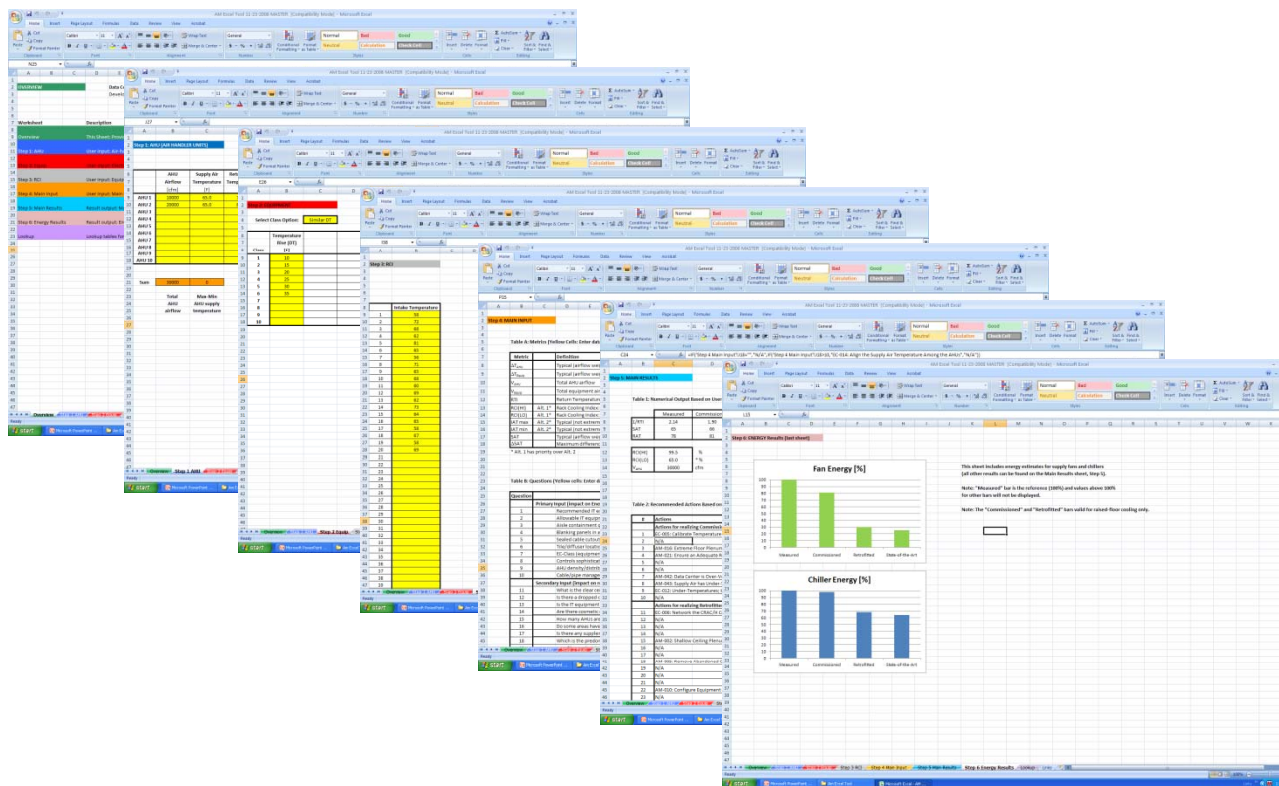
Documents

- Program Description

  http://www1.eere.energy.gov/industry/saveenergynow/cep_program.html

- Process Manual for use by the Practitioners (step-by-step)

- Software Manuals

  http://www1.eere.energy.gov/industry/saveenergynow/dc_pro.html
  - User's Manual
  - Engineering Reference
  - Data Collection Guide

- Assessment manual (training curriculum)
  - Power-Point slides with detailed notes
  - Process Manual slides
  - Software Manual slides

- Exams/Tests

Example of Tool Documentation: Air Management
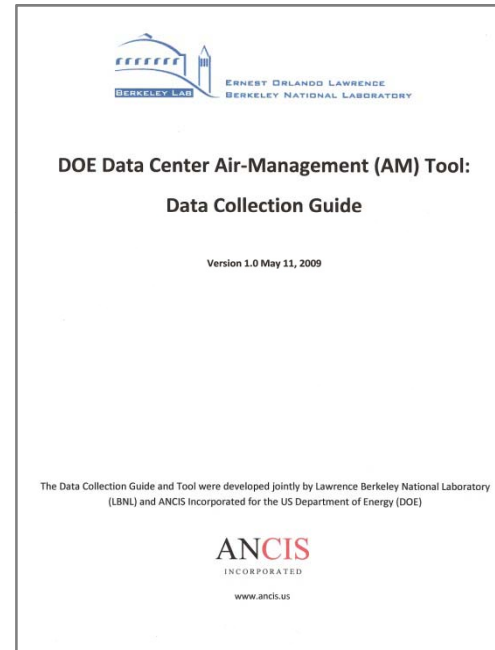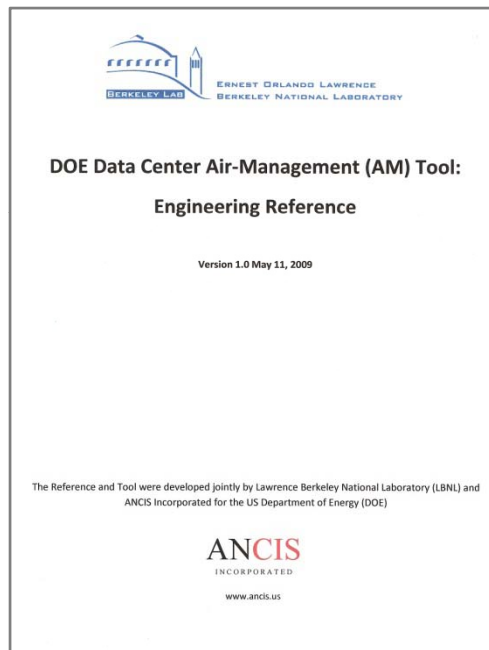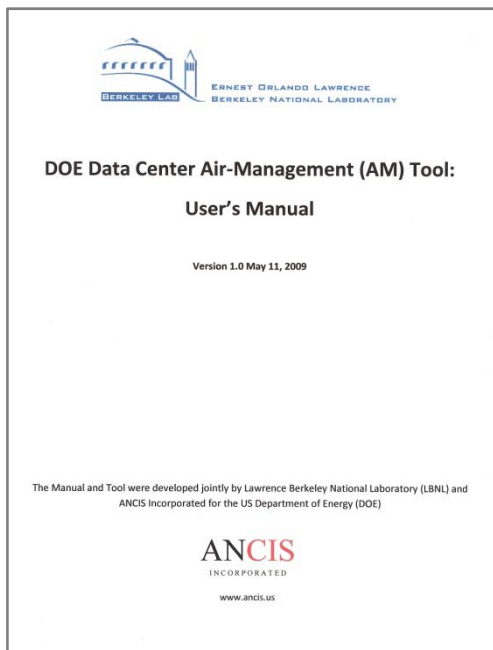
Certifying Organization(s)

- The front–end of the Program
- Program implementer and administrator of training/exam
- Not main developer of initial training curriculum and exam content
- Maintain a database of the Practitioners

The credibility/quality of certification can be increased by ANSI accreditation of the certifying organization.

Top desirable characteristics (as rated by Workshop Participants):
- Proven impartial status
- Technical core expertise
- Experience in certification programs
- Established infrastructure for collaboration.

An "RFP" will be issued in 2009.

Sign Up for Information
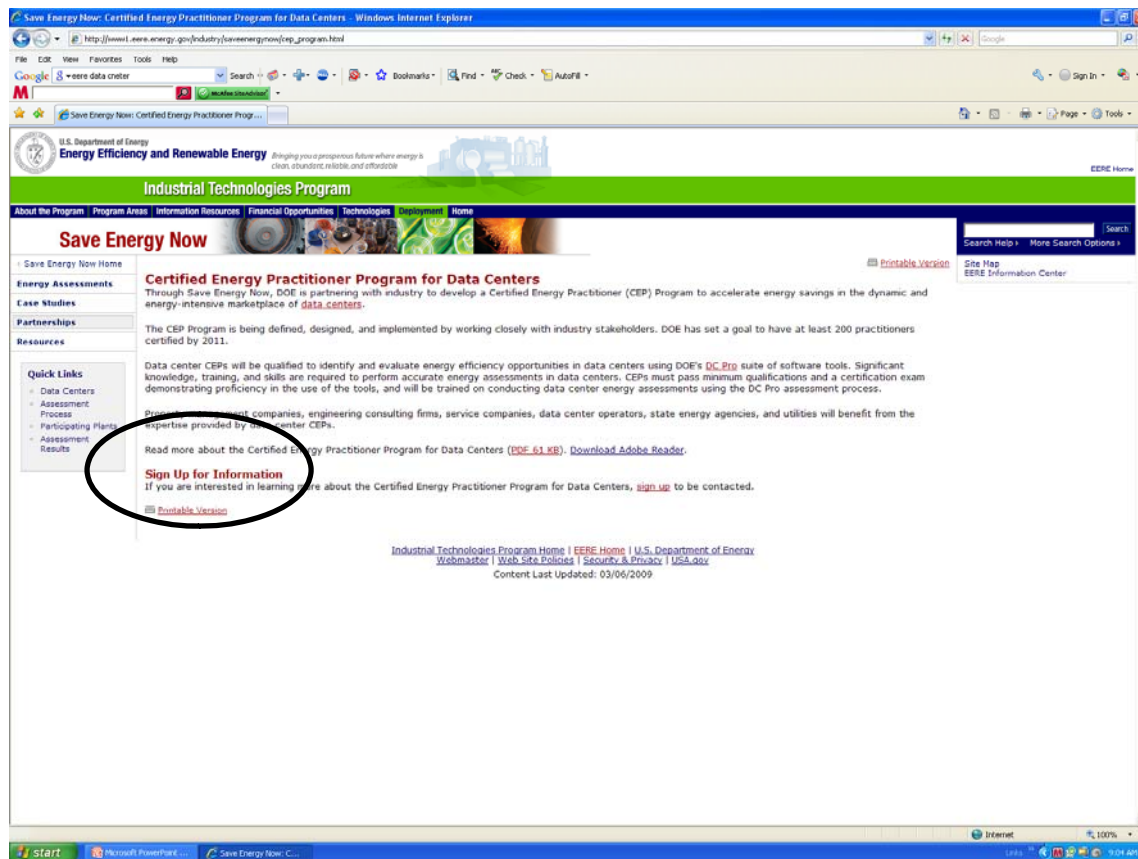
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Contacts for DC-CEP

Paul Scheihing   DOE
Paul.Scheihing@ee.doe.gov

Dale Sartor   LBNL
DASartor@lbl.gov

Bill Tschudi   LBNL
wftschudi@lbl.gov

Magnus K. Herrlin   ANCIS Incorporated
mherrlin@ancis.us